Section-A

(Multiple Choice Questions (MCQ's))

M.Marks: 20 **Time: 20 Minutes**

Q.1 Select the correct answer for each from the given option:

(i) An angle with measure less than 90° is called ____________.
(a) Right Angle (b) Acute Angle
(c) ObtuseAngle (d) None of these

(ii) A triangle having two sides congruent is called ____________.
(a) Scalene triangle (b) Isosecles triangle
(c) Equilateral triangle (d) None of these

(iii) The sub duplicate of 4 :9 is ____________.
(a) 2 : 3 (b) 16:81 (c) 8 : 18 (d) None of these

(iv) A circle which passes through three vertices of a triangle is called the ______ of the triangle.
(a) Escribed circle (b) Circum circle
(c) Inscribed circle (d) None of these

(v) Cosec 40° = ____________.
(a) Sin 40° (b) Sec 40° (c) Sec 50° (d) Sin 50°

(vi) Cartesian product of sets A and B is written as:
(a) A, B (b) A x B (c) A Δ B (d) B x A

(vii) (-3, -2) is in ____________ quadrant.
(a) Second (b) Third (c) Fourth (d) None of these

(viii) Product of a conjugate pair of binomial surds is a ____________ numbers.
(a) Real (b) Even (c) Rational (d) Odd

(ix) The degree of the Polynomial $x + y + xy^2$ is ____________.
(a) 2 (b) 3 (c) 4 (d) 0

(x) The natural logarithm has the base ____________.
(a) π (b) 10 (c) c (d) 1

(xi) The sum of 10 observations is 125, the mean is ____________.
(a) 15 (b) 75 (c) 50 (d) None of these

(xii) The solution set of $\sqrt{y-2} = -4$ ____________.
(a) 18 (b) ±4 (c) { } (d) None of these

(xiii) The solution set of $|3x| = 6$ is ____________
(a) { 2 } (b) { -2 } (c) {-2,2 } (d) None of these

(xiv) The measure of an angle inscribed in a semi-circle is equal to ____________.
(a) 90° (b) 180° (c) 120° (d) None of these

(xv) Every line contains at least ______ distance points.
(a) 2 (b) 3 (c) 4 (d) None of these

(xvi) $\frac{1}{p} - P$ is a ____________ expression
(a) Polynomial (b) Rational (c) Irrational (d) None of these

(xvii) The logarithm of the base of itself is ____________.
(a) 0 (b) 1 (c) 10 (d) None of these

(xviii) If $(x^3 - x^2 - 226x + 1410) \div (x + 17)$ then the reminder is ______.
(a) O (b) 20 (c) 40 (d) 50

(xix) If the number of rows of matrix A is equal to the number of columns, then A is called ______ matrix.
(a) Rectangular (b) Column (c) Square (d) None of these

(xx) If $A = \begin{bmatrix} 3 & 2 \\ 5 & 4 \end{bmatrix}$, then $|A| =$ ____________.
(a) 2 (b) 3 (c) 4 (d) None of these

Section-B

(Short Answers)

Q.2 If$(x + y, 2) = (4, x - y)$ then find x and y.

Q.3 Simplify the following:

(a) $4^{3^2} + 4^{2^3}$ (b) $\sqrt[3]{\frac{64a^3b^3}{216c^6d^{13}}}$

Q.4 Find the value of $\log_8 128$

Q.5 Find the value of x - y when x +y =7 and xy = 10

Q.6 Simplify : $\frac{4}{a^2 - 4a - 5} + \frac{8}{a^2 - 1}$

Q.7 Factorize any two of the following:
(a) $x^2 + 15x + 36$ (b) $a^8 + a^4 + 1$ (c) $x^2(y-z) + y^2(z-x) + z^2(x-y)$

Q.8 Define any two of the following and draw the figures.
(a) Opposite Rays (b) Supplementary Angles
(c) Vertically Opposite Angles

Q.9 Find the solution set of any one the following:
(a) $|5y - 3| - 6 = 3$ (b) $\sqrt{25y - 6} = 4\sqrt{y + 3}$

Q.10 Eliminate "a" from the equation , $a + \frac{1}{a} = x$ and $a - \frac{1}{a} = y$

Q.11. Find the mean proportional between 14 and 56.

Q.12. Find the arithmetic mean when D = x - 20, $\Sigma fD = 300$ and $\Sigma fD = 20$

Q.13 The two tangents drawn to a circle from a point outside it, are equal in length, Prove it.

Q.14 Construct a inscribed circle of a triangle ABC in which
$m\overline{AB} = 4.5\text{ cm}, m\overline{BC} = 5\text{cm}$ and $m\angle B = 60°$

Q.15 Prove that : $\frac{1}{1 + \sin\alpha} + \frac{1}{1 - \sin\alpha} = 2\sec^2\alpha$

Section-C

(Descriptive)

Note: Attempt any THREE question from the following ,each question carries10 marks.

Q.16 Find the H.C.F of $6x^3 + 24x^2 + 6x - 36$ and $4x^3 - 8x^2 - 20x + 24$ by factor method.

Q.17 If $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}, B = \begin{bmatrix} 1 & 2 \\ 0 & -1 \end{bmatrix}$ and $C = \begin{bmatrix} 0 & 3 \\ 1 & 5 \end{bmatrix}$, then Prove that A(B - C) = AB-AC.

Q.18 (a) The right bisectors of the sides of a triangle are concurrent . Prove it.
(b) The sum of the lengths of any two sides of a traingle is greater than the length of the third side, Prove it.

Q.19 (a) Find the solution set of $2x^2 + 21 = 13x$ by factorization.
(b) Find the solution set of $3(y^2 - 1) - 4(y + 1) = 0$ using quadratic formula.

Q.20 (a) Find all the value of trigonometric ratio of 30°.
(b) The foot of tower is at a distance of 20m from a point on the ground. The angle of elevation of the top of the tower from this point is of 60°. Find the height of the tower.